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ABSTRACT

Development programs have usually been organized for a one-way flow of information, from the experts to the users. This is especially true of American programs in "less developed" countries. A better arrangement would allow at least a two-way flow of information, so that, for example, clients could tell experts what problems need to be solved. This gives clients a more active role in their own affairs. A systems analysis approach, however, provides a better model for information flow in development. It allows one to gather data at all levels of a system and to analyze interaction within and among the levels. The four major elements in this model are information seeking, information gathering, development institutions, and clientele. The model is circular, which allows either institutions or clientele to initiate the seeking or giving of information. (JK)

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A DIACHRONIC COMMUNICATIONS CONSTRUCT FOR INFORMATION SYSTEMS ANALYSIS IN DEVELOPMENT

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A DIACHRONIC COMMUNICATIONS CONSTRUCT FOR INFORMATION SYSTEMS ANALYSIS IN DEVELOPMENT

Communication specialists working in development programs traditionally have been focusing their attention on the function communication performs in the dissemination of information to either the general public or specialized audiences grouped around common interests. Their predominant concern has been with a uni-directional flow of information -- from the source of new technology to the potential users of such knowledge. Thus, we find that "many of the change agencies are largely oriented to 'downward' communication", (Rogers, 1969, p. 191).

Typical of this approach is the following prescription of the communicator's task in development:

> "The success of rural development programs directly depends on the transfer of useful ideas from a reliable source to people who need them. The transfer must be made in such a way that, when received, the ideas result in action. This is the task of communication in rural development." (Leagans, 1961, p. 24)

This writer questions the assumptions on which this type of communication pattern is based and doubts it is an adequate guide for either research or practice in the field of development communication.[1] In its place he suggests the need to study a more comprehensive information flow -- a systems analysis of developmental communications.

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[1]A number of other writers also have expressed their apprehension about one-way communication in development. See, among others, Reeder et al. (1970).

A critique of the one-way model

The sender ⟶ receiver conceptualization of communication in development is reminiscent of an early phase of America's cooperative extension program, a period when

> "...the government or its extension agent assumed to know what was needed on the individual farm and in the community and the extension program came primarily from the government or the agent." (Smith and Wilson, 1930, p. 34)

This approach to development, one that concentrates on the institution ⟶ client information flow and the corresponding task it assigns to communication, is open to criticism on a number of counts.

A program organized principally for the dissemination of information -- a synchronic[2] communication mode tuned primarily to send but not to receive messages -- treats development as a uni-dimensional concept. It presumes that development entails a simple transfer of "knowledge" and "modernity" from one who has them to one who is less "fortunate". It also assumes that the main missing component to resolving issues about development is information, and second, that given information all participants will act with the same rationale.

The one-way communication model assumes that the sender knows what information is needed by the receiver. Coorientation research shows this to be a dubious assumption, i.e., that while people often think they know what the orientations are of others the accuracy of their perceptions is frequently less than perfect.[3] Case histories of adoption failures also suggest the need to question this assumption.

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[2]Thayer (1968, pp. 129-130) refers to a "synchronic" communication pattern as one where the product or the output of the communication encounter is one of "tuning" another to one's thinking or intentions, or of changing some aspect of the environment through the behavior of the other...the objective is the achievement of one or the other's intended state-of-affairs.

[3]See, for example, Groot (1970).

There is also the assumption that the necessary technology already exists and that the problem is merely one of convincing people to use it. Rogers (1969, p. 191), among others, questions whether this is really the case.

A one-way program also restricts communication to a linear model that omits any possibility for "creative interaction". A system that confines itself almost exclusively to questions about "how to best get out the information" neglects the notion of process -- that communication encompasses not only the transmission of messages but their receipt as well, i.e. that source and receiver are not static concepts but that people and institutions can both send and receive information and be changed by information.[4] Viewing development institutions primarily as "encoders" and the clientele as "decoders", the one-way program suggests that all the former needs to do is "talk" while the latter only needs to "listen".

A conceptualization of communication in development that is uni-dimensional also is remiss in that it minimizes, if not necessarily ignores, the importance of feedback.[5] More importantly, it disregards the role communication plays in

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[4]Dale's (1970) conceptualization of the communication process is directly to this point:

"A typical communication model includes the sender, the message, and the receiver. Many models suggest that communication moves one-way -- from the speaker to listener, writer to reader, and visualizer to observer. Communication is seen as linear rather than circular. There is limited feedback.

"When communication fails we say that the message didn't get across, meaning that the sender's message didn't reach and influence the intended receiver. Herein lies a fallacy in much of the thinking about communication. Effective communication is not a one-way process aimed chiefly to change the receiver. Rather it is a two-way dialogue which changes both sender and receiver. Communication at its best is the sharing of ideas and feelings in a mood of mutuality. There is continuing dialogue.

"In one-way communication, however, the sender assumes that the receiver is a target to be aimed at but with little or no provision for the 'target' to shoot back. There is no creative interaction. One-way communication assumes the rightness of the message and is judged by whether it reaches and changes the 'target audience'. But who wants to be a target? There is no real communication between manipulator and manipulated."

[5]Zajonc's (1960) work in the area of cognitive tuning also suggests potential problems that may arise in a communication system that should be two-way but that actually functions with one side primarily as transmitters of information and the other side as receivers of information.

the creation of new technology, in formulating policy, and in translating general objectives into specific program plans which actually have the capacity of transforming the social order to bring about development.

At a more theoretical level, the development institution → consumer approach has been described as the Research, Development and Diffusion (R, D&D) perspective; and to a certain extent it also fits the Social Interaction (S-I) school of thought. In the former, the development initiative is taken by researchers, developers and the disseminators; the latter merely assumes that the innovation already exists in a developed form, suitable for use. Both the R, D&D and S-I models are sender oriented, with the receiver playing a passive role. However, if development is not a concrete goal but is viewed instead as a dynamic process, a good case can be made that the receiver must play an active part in shaping his own future...

> "...that self-initiated change has the firmest motivational basis and the best prospects for long-term maintenance. The outside expert is here today and gone tomorrow; tomorrow all his skill, understanding, and enthusiasm for the innovation may be gone, too. Therefore, the user must not only accept the innovation; he must also internalize it, making it a part of his routine behavior and investing in it his own energy and enthusiasm. The user will be more likely to internalize an innovation that he sees as his own, something that he has accepted by his own free and deliberate choice to meet his own specific need, and something that he has worked on himself to adapt to his own specific need." (Havelock, 1970, p. 11:14)

On the role of communication in development and the need for two-way information flows

That communication plays an important role in development is well recognized in the literature. A general conclusion is that while communication performs a necessary role in the process, communication is not a sufficient condition for development.

Insofar as development is dependent on new technology and its widespread diffusion, the task communication can perform is limited in scope. As Brown (1968) has aptly pointed out, technological information must often be preceded or accompanied by other situational changes before it can be used. Thus, "A communicator who sets out to speed the diffusion and adoption of improved farming methods will soon find that he must operate within a rather narrow margin between what farmers already know and use and what they are capable of using given the situational restraints (physical, economic, institutional and technological) within which they must work." "Skillful communication can change a peasant's perceptions of his situation but it cannot, acting alone, change that situation very much. It can help a backward farmer to see opportunities he ignores, but if few opportunities exist information will not create them." (Brown and Kearl, 1967)[6]

This view, while admitting to certain limitations in what communications can do in modernization, still is principally concerned with the dissemination of information to various clientele groups. In essence, Brown's point is that from the farmer's point of view, information content relevant to the problems at hand is a necessary condition if communication is to play a direct role in the modernization of agriculture.

Rogers (1969, p. 172) essentially agrees to the notion that the information disseminated needs to be relevant, that "the needs of the clientele must be recognized if change programs are to be successful." At the same time (p. 191) he also doubts, however, that there is much relevant information to disseminate. And the reason there is a lack of adaptable innovations, he feels, is that "the farmers' needs for research are seldom communicated 'up' to agricultural scientists."

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[6]Grunig (1969) also argues that "communication is a complementary factor to modernization and development -- that it can have little effect unless structural changes come first to inititate the development process."

This suggests that at the very minimum there is a need to understand two-way flows of information[7] -- not only from development institutions to various clientele groups but vice versa as well. If the information disseminated by development institutions is to be relevant, information also has to flow from the clientele groups to these institutions.[8]

Such an information flow, it seems, needs to be more than merely a problem-solution exchange. If development institutions are to emphasize a problem-solution exchange. If development institutions are to emphasize a problem-oriented research program, the question really becomes one of who decides -- on the basis of what information -- the research priorities? Are the clientele groups to be actors or mere spectators in this decision-making process?

Ideally, the communication between a development institution and its publics is diachronic[9] rather than synchronic in nature. In diachronic com-

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[7]Havelock (1970, p. 9:36) feels that "Of all the transmission media used for the dissemination of new knowledge, the two-way channels are the least studied, the least used, but, potentially the most rewarding." He also suggests (p. 9:35) that "some form of two-way communication which permits involved interaction between the resource (institution) and the user is necessary for the ultimate adoption of a change by an individual, a group, or a total system;" and that (p. 9:40) "two-way transmissions are imperative for the adoption of innovations requiring alterations in attitude or behavior."

[8]Reeder, et. al. (1970) emphasize that "...the population of a community needs to be considered, not only as a collection of audiences to be sent messages, but also as a major source of messages in terms of knowledge and experience that will decide how new knowledge is to be accepted and applied to community problems. If such messages from audiences are provided channels, they can serve to change communication systems within the community, and to affect the development resources themselves, whether they are individuals or institutions, within or outside of the community." Smith & Wilson (1930, p. 134) also suggests that "In the development of an extension program for any community, the farmers located there have about as much to contribute toward making the program worthwhile for the area as so the state experiment station and the U.S. Department of Agriculture."

[9]Thayer (1968) sees the objective in a diachronic communication mode as the achievement of some mutually advantageous consequence not known in advance by either participant, and in which the outcome is typically some new insight or comprehendability on the part of one or all participants.

munication encounters, recognition is made of the notion that development is basically concerned with problem-solving behavior -- and that many people are concerned with these problems and can make contributions toward their solution.[10] Most importantly, it assigns an active role to the receiver -- the ultimate user of new knowledge and adopter of innovations.

Even though extension in the U.S. is still often described in terms of a one-way flow of information,[11] in practice there appears to be a good deal of dialogue. Yet, somehow, when the concept of extension was transferred to many of the less developed countries, the program frequently does not appear to go beyond the expert → user stage. As to the reason for this, one can only speculate.

When many of the foreign assistance programs were started in the 1950's, the transferability of theory and practical know-how were assumed. It is only in recent years that this assumption has come to be doubted -- the beginning of a realization that there is a need for local information inputs as well as considerable adaptation and modification.

In many of the "less developed" countries, change agencies have either been organized by or at least with the assistance of "foreign experts". It is possible that through this much of the diachronic nature of extension was lost because these foreign experts simply cannot relate well enough to local problems

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[10]Smith and Wilson (1934, p. 134) attribute the success of American extension work to the "cooperativeness" of the program, an approach under which "the agents of government and the people concerned together make the analysis of conditions, together select the outstanding needs, and together make a program to meet these needs.

[11]American agriculture, with its emphasis on "the orderly transition of knowledge from the research to development to diffusion and finally to adoption by the consumer" (Havelock, 1970, p. 2:42) is often cited as a prime example of the R,D & D model. There, the county agent of the Cooperative Extension Service is "most frequently viewed as a one-way communicator of new technical information from the state university to the farmer." (Havelock, 1970, p. 7:3)

and local people to do anything but recommend pat solutions. It has also been suggested that indigenous extension workers also are sometimes quite "foreign" to the rural areas of their own countries. This, too, interferes with the information flow both to and from research centers.

In general, diachronic communication patterns in development are rare. Development institutions normally are organized to disseminate information rather than to gather or receive information -- and be changed or influenced by such information. Few, if any, institutions have devised any systematic way for dealing with voluntary or spontaneous information received from clientele groups.[12] Fewer yet of these institutions attempt on their own volition to determine what the information input of the clientele might be.[13]

Development institutions are organized. The clientele in developing countries, frequently is not in such a vantaged position.[14] Where change agents do encourage or at least facilitate the organization of farmer groups, it usually is to serve as a vehicle for information dissemination rather than to gather information or enter into a development dialogue.

Many potential clientele groups, however, have not yet reached the necessary level of organizational sophistication, especially in the less developed countries,

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[12]The importance and need for two-way communication was recognized recently in Canada when that country established a Central Information Agency. One of the three major functions of this new organization is "to provide better systems for Canadians to make known their viewpoints to their government". (Scanlon, 1970)

[13]Some do. University Extension at Wisconsin, for example, each year has some questions on "perceived problems" included in a state-wide sample survey.

[14]Individual farm organizations also actively lobby at state and national levels. In developed countries, we do frequently find a particular audience grouping itself under some common banner to make its views known. One such attempt is illustrated by a recent newspaper headline: "State Farm Leaders Unite for Ag Task Force". (Wisconsin State Journal, January 9, 1971)

and have little opportunity to participate in the "development dialogue". And, organization it takes. As John Gardner said in a recent newspaper advertisement asking people to join his "Common Cause Citizen Lobby": "Everybody's organized but the people." (Milwaukee Journal, January 10, 1971)

A Diachronic Communication Construct for Information Systems Analysis in Development

In the discussion so far, we have tried to point out some of the shortcomings of conceptualizing development in terms of a one-way communication model. At the same time, we have also suggested the importance of studying at least two-way information flows.

There really, though, is a need for a communications systems analysis in development. Utilizing the systems approach, one gathers data at the many levels of a total system; that is, from the components of the system and its subsystems, and studies the interrelationships and interactions among them. Such an analysis should further our understanding of the process and allow us to make suggestions to improve the entire system.

The following construct, a model[15] for analyzing the total information system in development, is offered as a step in this direction.

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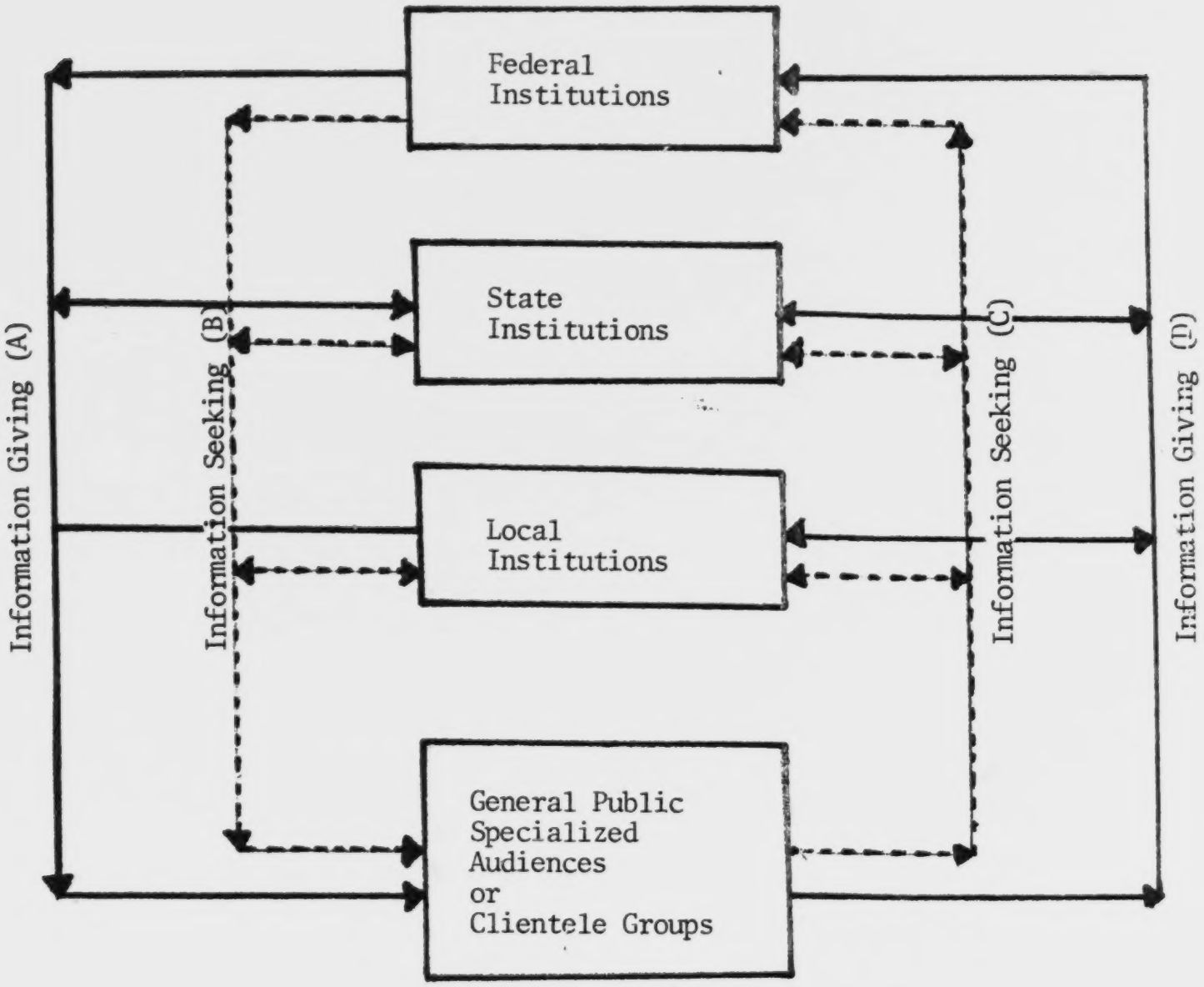
[15]The usefulness of model is primarily in clarifying what we are or should be looking for, i.e., they specify the elements to be studies. They can also help to organize a body of knowledge.

FIGURE 1: Diachronic Communications Construct For Information Systems Analysis In Development



The model emphasizes four major elements: (1) Information giving, (2) Information seeking, (3) Development institutions, and (4) Clientele groups. These elements can be studies in terms of content, sources and receivers, channels, and public objectives.

The model is also essentially circular; this avoids the pitfalls of the sender → receiver dichotomy. Communication can be initiated at any one of four points: institutional information seeking or giving, or public information seeking or

giving. Also, various levels of development institutions are indicated to account for both inter- and intra-institutional communication patterns.

Institutional information giving (A) and public information seeking (B) comprise what is usually referred to as the diffusion process. If both are operative -- and assuming useful and needed information -- relatively rapid diffusion can be expected. If only one -- sender or receiver -- is active, the process will slow down and stop when both are inactive.

The corollary of diffusion, often referred to as feedback, we have termed the infusion process -- again to distinguish between information giving and information seeking. This distinction is important. Public or client initiated information giving can be expected to be biased. It is an "active" state not usually participated in by the "average" client.[16]

Institutional information seeking, on the other hand, can ensure representativeness of the population through such techniques as the sample survey. The census also is a form of institutional information seeking as is the information gathered regularly by such organizations as the Department of Labor and the Statistical Reporting Service of the U.S. Department of Agriculture. Policy research, a relatively recent phenomenon, is another example of institutional information seeking. In less developed countries, one might expect relatively little public information giving, thus adding to the importance and need for institutional information seeking.

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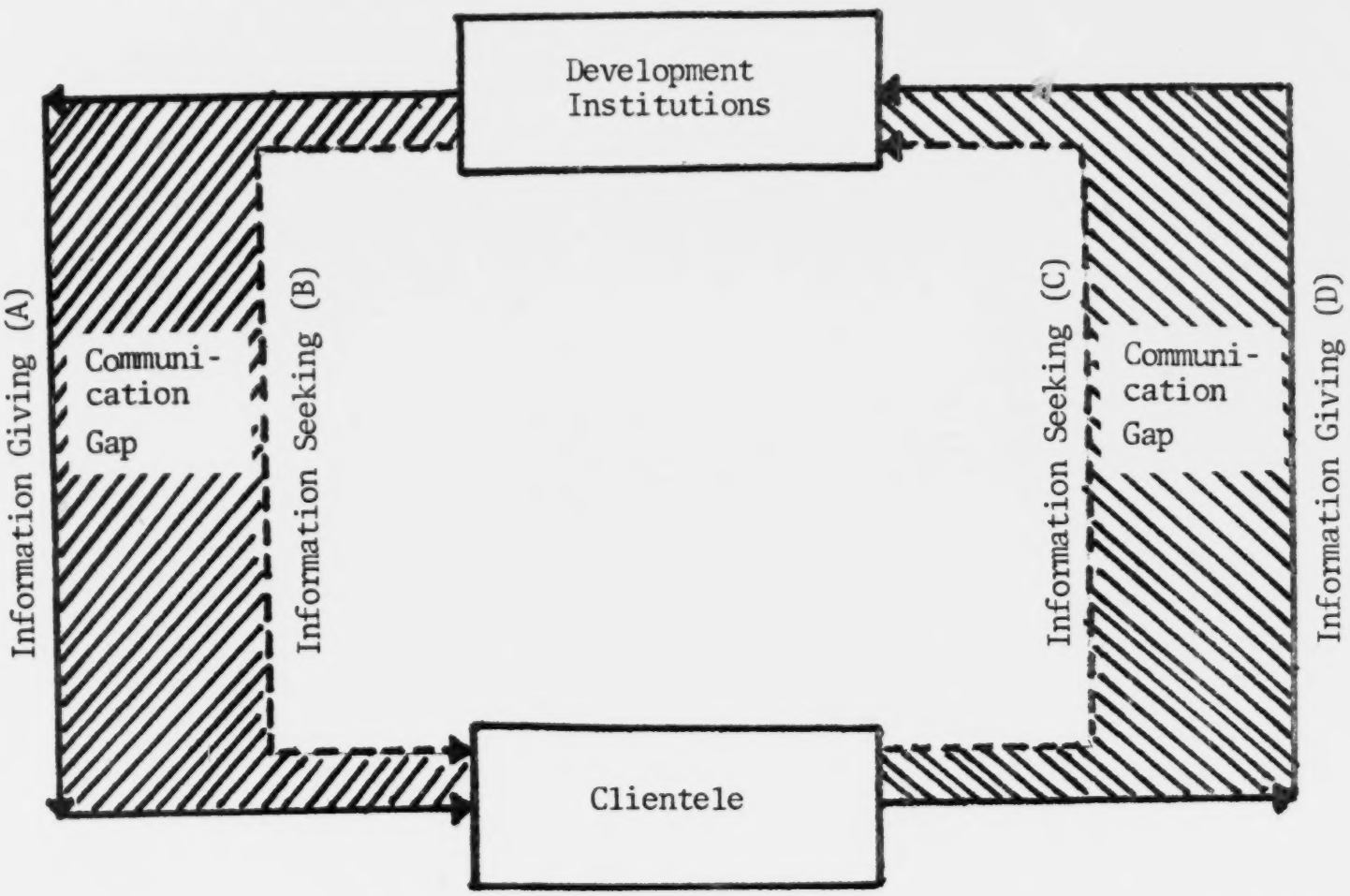
[16]The "degree" of bias may in itself be a measure of development. In the U.S. for example, farmers' interests are represented by a variety of organizations -- Farm Bureau, Grange, National Farmers Organization, and the Farmers Union. In less developed countries such a wide diversity of representation is often lacking and only large-scale, higher SES farmers participate in any development dialogue that takes place.

Between the diffusion and infusion processes, there appear to be some major communication differences. In diffusion, the information flow is usually from "few to many", whereas the infusion process is often an information flow from "many to few".

Figure 2 illustrates a major concern in development communication -- the potential gap between information giving and information seeking. The development communication system's efficiency or effectiveness is reduced to the extent that information giving and seeking do not "match" each other, i.e., when the information disseminated by development institutions is not of the same type and nature as that which is sought (needed/wanted) by the clientele. Similarly, the

FIGURE 2: The Communication Gap In Development.

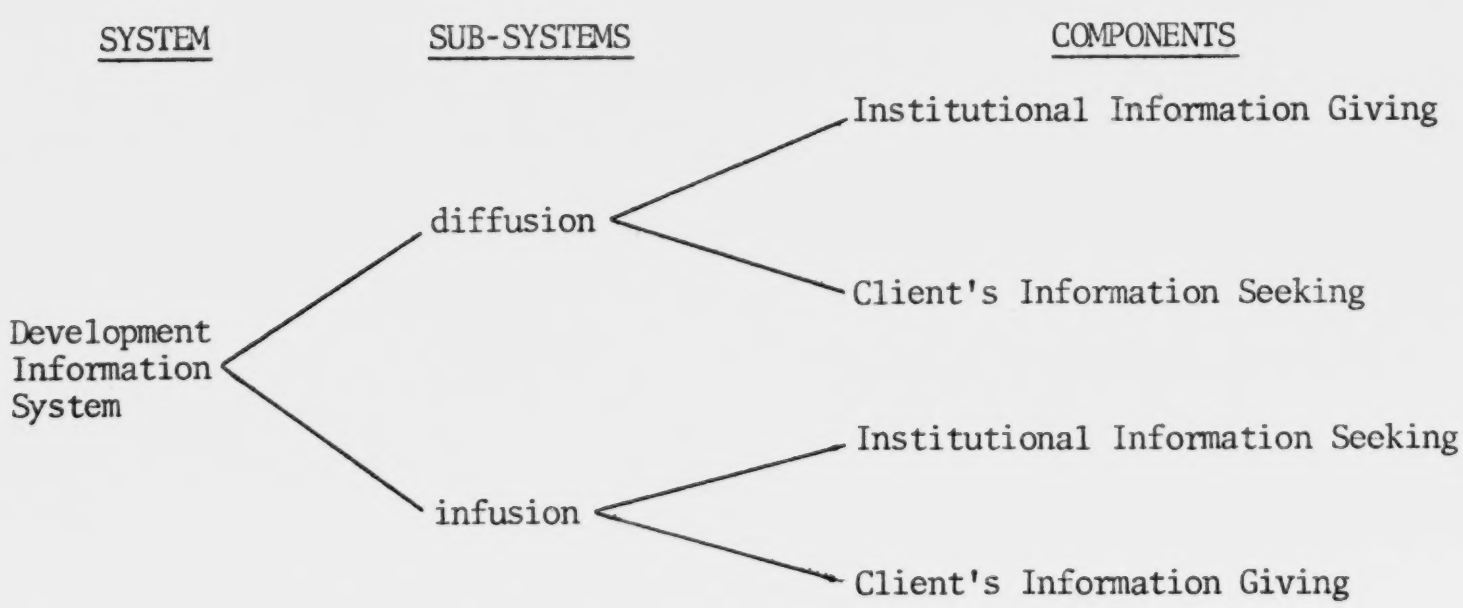


system is operating at less than 100 percent efficiency if the information is not disseminated through the same channels as those utilized (perferred) for information seeking.

The figure also illustrates the type of hypothesis that can be derived from the model in terms of such variables as information content and channels, i.e., the greater the overlap between A and B and C and D, the greater the efficiency of the system.

The diachronic model suggests three areas of reserach, each at a different hierarchical level: (1) the development information system, (2) its subsystems, diffusion and infusion, and (3) the individual components. How these relate to each other is illustrated in Figure 3.

FIGURE 3: The Development Information System; It's Sub-Systems, and Components



Research and practice in development communication, to date, have emphasized diffusion -- specifically institutional information giving. Some attention has also been given to "feedback", but mostly in terms of information giving on the part of the clientele. Information seeking, both institutional and client initiated, has been pretty much neglected.

While the diachronic communication model described in these pages emphasizes vertical communication, this is not meant to detract from the need to **also** study horizontal communication patterns. Farmers, for example, also learn new ideas from other farmers -- either directly or through "success stories" in farm media. Farmers at the evaluation stage in the adoption process also are said to consult other farmers. Here, again, it may be useful to distinguish between information giving and seeking, the expectation being that communication at this level -- at least in a competitive situation -- will be mostly in the form of information seeking rather than information giving.

We have also described communication principally in terms of agricultural development. Many of the ideas discussed, however, are equally applicable to other development situations, i.e. urban problems. The International City Management Association, for example, for years has been active as "an urban information clearinghouse to keep cities and counties informed of innovative ideas, approaches, and methods used by other communities to solve problems." Recently, that organization started "working directly with cities, discovering needs, finding possible solutions, introducing new ideas, experimenting with a new product or technique, evaluating the degree of success or failure, and creating a system to transfer a proven product to other municipalities." (Keane, 1971, p. 3)

So far, little has been said about the content of communication -- in terms of either diffusion or infusion. It appears that here, too, one can begin to identify some potential constraints on the information system. In relatively undemocratic societies, one might expect limits on information about what ought to be done about problematic situations. Similarly, there can be legal constraints, i.e., Wisconsin's laws governing the dissemination of birth control information, and economic constraint in terms of channel availability.

In both research and practice, in differentiating between synchronic and diachronic communication, it is also important to bear in mind the distinction between communication channels which are essentially one-way and those that allow for creative interaction in a two-way dialogue.

In conclusion, we also see no basic conflict between the three development perspectives cited in this paper. While we see the problem-solving approach as being the most useful and meaningful in development, this does not exclude the need for research, development and diffusion.

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